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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,717	01/07/2002	Wolfgang Singer	637.0016USU	1778

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EXAMINER

HO, ALLEN C

ART UNIT	PAPER NUMBER
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2882

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/040,717

Applicant(s)

SINGER ET AL.

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-16, 19-21 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-16, 19-21 and 24-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities:

Line 7, "each have" should be replaced by --each has--.

Appropriate correction is required.
2. Claim 14 is objected to because of the following informalities:

Line 5, "each have" should be replaced by --each has--.

Appropriate correction is required.
3. Claim 15 is objected to because of the following informalities:

Line 7, "each have" should be replaced by --each has--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 3-8, 12, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 19 recite "a second raster element is assigned to a first raster element".

This recitation is indefinite because it is unclear what structure is set forth by this recitation.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 9, 10-16, 20, 21, and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshino (U. S. Patent No. 5,677,939).

With regard to claim 9, Oshino disclosed an illumination system for lithography with wavelengths of ≤ 193 nm that comprises: a first optical element (2), which is divided into first raster elements and lies in a first plane, wherein each of the first raster elements has an x-dimension and a y-dimension with an aspect ratio, wherein at least two of the first raster elements have aspect ratios of different magnitude (Fig. 3A), and wherein the illumination system produces a two-dimensional image of the raster elements in an object plane (column 19, lines 34-41).

With regard to claim 10, Oshino disclosed the illumination system according to claim 9, the illumination system further comprises a collector unit (51), which illuminates the first plane with the first raster elements.

With regard to claim 11, Oshino disclosed the illumination system according to claim 9, further comprising at least one field mirror (3).

With regard to claim 13, Oshino disclosed the illumination system according to claim 9, wherein the first raster elements are rectangular (Fig. 3A).

With regard to claim 14, Oshino disclosed an illumination system for lithography with wavelength of ≤ 193 nm that comprises: a first optical element (2), which is divided into first raster elements and lies in a first plane, wherein each of the first raster elements has an x-dimension and a y-dimension with an aspect ratio, wherein at least two of the first raster elements have aspect ratios of different magnitude (Fig. 3A), wherein the illumination system defines a field to be illuminated in an object plane (6) of the illumination system, wherein the field represents a segment of a ring field (column 19, lines 42-53), wherein the first raster elements are mirrors, and wherein the illumination system produces a two-dimensional image of the first raster elements in the object plane (column 19, lines 34-41).

With regard to claim 15, Oshino disclosed a projection exposure system for microlithography comprising: (a) an illumination system for lithography with wavelength of ≤ 193 nm having: a first optical element (2), which is divided into first raster elements and lies in a first plane, wherein each of the first raster elements each has an x-dimension and a y-dimension with an aspect ratio, wherein at least two of the first raster elements have aspect ratios of different magnitude (Fig. 3A), and wherein the first raster elements are mirrors, and wherein the illumination system produces a two-dimensional image of the first raster elements in an object plane (column 19, lines 34-41).; and an exit pupil; (b) a pattern-bearing mask (6), which lies in the object plane; (c) a projection device (7), with an entrance pupil, which coincides with the exit pupil of the illumination system, wherein the projection device images a illuminated portion (BF)

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of the pattern-bearing mask in an image field of the projection device; and (d) a light-sensitive substrate (8), which lies in a plane of the image field.

With regard to claim 16, Oshino disclosed a method for producing microelectronic components (column 1, lines 14-26), the method comprises using the projection exposure system according to claim 15.

With regard to claim 20, Oshino disclosed an illumination system comprising: an optical element (2) having a first raster element on a support structure (the optical element) and a second raster element on the support structure (Fig. 3A), wherein the first raster element has a first aspect ratio, wherein the second raster element has a second aspect ratio, wherein the first raster element is a first mirror and the second raster element is a second mirror, wherein the first aspect ratio is not equal to the second aspect ratio, wherein the illumination system defines a field to be illuminated in an object plane (6) of the illumination system, wherein the field represents a segment of a ring field (column 19, lines 42-53), and wherein the illumination system produces a two-dimensional image of the first raster element in the object plane (column 19, lines 34-41).

With regard to claim 21, Oshino disclosed an illumination system for radiation wavelength of ≤ 193 nm comprising: an optical element (2) having a first raster element in a plane on a support structure and a second raster element in the plane on a support structure, wherein the first and second raster elements are of different sizes (Fig. 3A), and wherein the first raster element is a first mirror and the second raster element is a second mirror, wherein the illumination system defines a field to be illuminated in an object plane (6) of the illumination system, wherein the field represents a segment of a ring field (column 19, lines 42-53), and

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wherein the illumination system produces a two-dimensional image of the first raster element in the object plane (column 19, lines 34-41).

With regard to claim 24, Oshino disclosed the illumination system according to claim 20, wherein the support structure is a raster element plate (the optical element itself is a flat plate).

With regard to claim 25, Oshino disclosed the illumination system according to claim 21, wherein the support structure is a raster element plate (the optical element itself is a flat plate).

With regard to claim 26, Oshino disclosed an illumination system for radiation of ≤ 193 nm comprising: an optical element (2) having a first raster element situated substantially in a plane and a second raster element situated substantially in the plane, wherein the first and second raster elements are of different sizes (Fig. 3A), and wherein the first raster element is a first mirror and the second raster element is a second mirror, wherein the illumination system defines a field to be illuminated in an object plane of the illumination system, wherein the field represents a segment of a ring field (column 19, lines 42-53), and wherein the illumination system produces a two-dimensional image of the first raster elements in the object plane (column 19, lines 34-41).

Response to Amendment


8. Applicant's amendments filed 21 February 2007 with respect to claims 9-11, 13-16, 19-21, and 24-26 have been fully considered and are persuasive. The rejection of claims 9-11, 13-16, 19-21, and 24-26 under 35 U.S.C. 112, first paragraph, has been withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Allen C. Ho, Ph.D.
Primary Examiner
Art Unit 2882

07 March 2007